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The purpose of this study was to record, via video tape, and categorize the nonverbal teacher behavior of two women physical educators at The University of North Carolina at Greensboro. The study was designed to determine if specific class organization affects the nonverbal patterns of teachers. The nonverbal teaching behavior patterns were analyzed using Love and Roderick's nonverbal category system. Each teacher was observed and her behavior categorized while teaching both a theory class and an activity class for a three-week period. Observation (filming) took place two times per week in each of the four classes involved in the study. Three judges then recorded the nonverbal teacher behaviors from the video taped lessons.

The percentages of interjudge agreement were never lower than 85 and varied only from 85 to 91. The correlations of interjudge agreement were .9601 and above.

The percentages of intrajudge agreement were never lower than 86. There was greater variability in intrajudge agreement with a range from 86 to 97 per cent.

Two, three-way analyses of variance revealed that hypothesis one, that there would be no difference between the amount of physical educators' use of indirect nonverbal

behavior in a college level physical education theory class and an activity class; and hypothesis two, that there would be no difference between the amount of physical educators's use of direct nonverbal behavior in a college level physical education theory class and an activity class, were both found tenable. Hypothesis three, that there would be no difference between the amount of physical educators' use of indirect and direct nonverbal behavior in either a college level physical education theory class or an activity class, was found untenable at the 1 per cent level of confidence.

As a point of interest, the amount of teacher verbalization was recorded and analyzed in regard to the difference between the two teachers' verbalization time for each of the recorded lessons. A statistically significant difference at the 1 per cent level of confidence was found between the amount of verbalization by Teacher A and Teacher B.

THE RELATIONSHIP BETWEEN THE USE OF INDIRECT AND DIRECT NONVERBAL BEHAVIOR OF COLLEGE WOMEN PHYSICAL EDUCATORS IN ACTIVITY CLASSES AND THEORY CLASSES

by

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CHAPTER I

INTRODUCTION

In the classroom or gymnasium, the teacher, more than anyone else present, has the potential to influence the social climate which changes behavioral patterns. How the teacher acts can determine whether students react with independent or dependent behaviors.

The study of teacher behavior is concerned with the defining of teachers' actions, both verbal and nonverbal. The study of that behavior may increase the understandings of teachers in relation to their personal-professional life style in the classroom or gymnasium. By examining the results of a systematic observation of their classroom behaviors, teachers may become much more aware of their teaching style. If it is possible for a teacher to view himself through the media of film or tape as he teaches a real class, the opportunity exists for him to see himself as the students see him, to analyze critically his behaviors, and to seek means for change and improvement.

Flanders (20) has developed a system for the analysis of verbal teacher behaviors. The underlying philosophy of

the Flanders system is valuable for an understanding of this study of nonverbal teacher behavior. Flanders' system distinguishes between indirect and direct teacher influence. Indirect influence increases the range of possible student responses, while direct influence decreases the number of alternate student responses. For example, giving directions usually stimulates compliance due to the limited number of acceptable student responses. However, asking a student's opinion encourages student participation and provides a wide gamut of possible responses.

It must be emphasized that a value judgment cannot be placed on indirect and direct influences. Both are essential in the classroom and both require specific types of responses under varying conditions.

Research relating to the comparison of classroom teacher behavior and teacher behavior in a less restricted area such as the gymnasium, swimming pool, or dance studio is almost nonexistent. In order to investigate possible differences of classroom teachers as compared with physical education activity teachers, it was the purpose of this study to analyze the nonverbal behaviors of teachers in the classroom and in the gymnasium and swimming pool.

DEFINITIONS

To facilitate understandings of the use of specific terms, the following definitions were accepted:

Indirect (Nonverbal) Behavior: ". . . encourages participation by the student and increases his freedom of action." (20:19)

Direct (Nonverbal) Behavior: ". . . increases the active control of the teacher and often stimulates compliance." (20:21)

Activity Class: An educational experience in which the major emphasis for learning is through the modality of movement.

Theory Class: An educational experience in which the major emphasis for learning is through the cognitive processes.

Interjudge Agreement: The extent to which different trained judges agree upon what they see when recording the nonverbal behavior of teachers from video taped physical education lessons.

Intrajudge Agreement: The extent to which each judge agrees with what he has observed and recorded at an earlier time.

CHAPTER II

STATEMENT OF PROBLEM

The purpose of this study was to record, via video tape, and categorize the nonverbal teacher behavior of two women physical educators at The University of North Carolina at Greensboro. The study was designed to determine if specific class organization affects the nonverbal patterns of teachers. The nonverbal teaching behavior patterns were analyzed using the Love and Roderick "Systematic Observation of Teacher Non-Verbal Behavior" scale. Each teacher was observed and her behavior categorized while teaching both a theory class and an activity class for a three-week period. Observation (filming) took place two times per week for three successive weeks in each of the four classes involved in the study.

In addition to the nonverbal record, as a point of interest, the teachers' verbalization time was recorded on the audio-video tape in order to determine the amount of verbalization during the recording period of the video tapes.

HYPOTHESES

In order to handle the data in a meaningful way, three null hypotheses were established with regard to the problem. These hypotheses were:

(1) There is no difference between the amount of physical educators' use of indirect nonverbal behavior in a college level physical education theory class and activity class.

(2) There is no difference between the amount of physical educators' use of direct nonverbal behavior in a college level physical education theory class and activity class.

(3) There is no difference between the amount of physical educators' use of indirect and direct nonverbal behavior in either a college level physical education theory class or an activity class.

CHAPTER III

REVIEW OF LITERATURE

INTRODUCTION

The review of literature has three primary foci. The first and second sections present a review of nonverbal communication and nonverbal teacher behavior, indicating the importance of such behavior in interpersonal relationships, especially those relationships between the teacher and the student. The third section reviews several systems used in the observation of teacher behavior, the content of the category systems, the procedures for recording behavior, and the implications of research findings for the improvement of teacher behavior.

NONVERBAL COMMUNICATION

A general consensus exists among authorities concerning the definition of nonverbal communication. Nonverbal language is transmitted in silent terms and includes such behaviors as a facial expression, a gesture, a glance, a frown, a smile, deliberate silence, a tone of voice, and bodily posture.

Ruesch and his colleagues (47:209-210) pioneered the research in the area of nonverbal communication. From their studies they concluded that nonverbal language could be identified in one of three categories: sign language, action language, and object language.

The category of "sign language" involves gestures and voice intonation. The hitchhiker's gesture or the tone of voice functioning as a question mark or exclamation point would be included in this category.

"Action language," the second category, includes body movements which are not used exclusively to transfer a message. Locomotor movements such as walking, running, sitting, and hopping serve the individual's personal need, but a deeper meaning may be perceived by those sensitive to the message of human movement. It is conjectured that a great deal of information may be drawn from the manner in which physical movement is performed.

The third category, "object language," encompasses the display of material possessions on and around the human body. The clothing one chooses and the way it is worn elicits information about the individual and may at the same time be a form of message being sent to others. The arrangement of furniture in one's home conveys information about those who live within that arrangement.

Sign language for the deaf has always been a means of nonverbal communication. Concerning the use of sign language by the deaf, Stokoe (51) emphasized the point that the elements of a sign language can be perfectly clear and comprehendible to anyone who can see. In addition, the users of sign language have various artistic forms of expression. Two of the best organized efforts are widely accessible to non-signing audiences. One is the combination of sign language and interpretive dancing in which signs naturally, but artistically, merge into the total movement of the dancers. The other is the National Theater of the Deaf, based on a development from pantomime, which has performed on televised and on national and international tours.

It is interesting to consider the idea that a message can be sent, received, interpreted, and applied while not a verbal utterance has been made. The power of communication inherent in human movement is not only a fascinating concept but one almost virtually untapped or not understood.

In their study of cross-cultural nonverbal communications, Ekman et al. (16) found that observers who reexamined photographs eliciting various facial expressions chose the predicted emotions that had been previously identified with the photographs. These findings suggested that pan-cultural

recognition of certain facially expressed emotions does indeed exist, even though these emotions may not be stimulated or controlled in similar ways. Furthermore, these findings supported Darwin's theory (15) that human facial expressions of emotion are similar, because of their evolutionary origin, regardless of culture.

Darwin explained the origin or development of expressive actions in man and lower animals in relation to the following three principles:

> (1) . . . that movements which are serviceable in gratifying some desire, or in relieving some sensation, if often repeated, become so habitual that they are performed, whether or not of any service, whenever the same desire or sensation is felt, even in a very weak degree.
>
> (2) The habit of voluntarily performing opposite movements under opposite impulses has become firmly established in us by the practice of our whole lives. Hence, if certain actions have been regularly performed, in accordance with our first principle, under a certain frame of mind, there will be a strong and involuntary tendency to the performance of directly opposite actions, whether or not these are of any use, under the excitement of an opposite frame of mind.
>
> (3) Our third principle is the direct action of the excited nervous system on the body, independently of the will, and independently, in large part, of habit. Experience shows that nerve-force is generated and set free whenever the cerebro-spinal system is excited. The direction which this nerve-force follows is necessarily determined by the lines of connection between the nerve-cells, with each other and with various parts of the body. But the direction is likewise much influenced by habit; inasmuch as nerve-force passes readily along accustomed channels. (15:347-348)

It is Darwin's premise that every true or inherited movement of expression seems to have had some natural and independent origin other than for the exclusive purpose of expression. However, once these expressions are acquired the movements may be consciously enacted as a means of communication. An example of such behavior is illustrated by Darwin's theory that the vocal organs, through which various expressive noises are produced, were first developed for sexual purposes, in order that one sex might call or charm the other. (15:354)

It would seem, however, that Darwin has contradicted himself with this example. Communication, verbal or nonverbal, is the transference of an idea or expression from the sender to a receiver. The man attempting to charm a mate through verbal expression certainly would seem to be attempting to communicate an idea through verbal expressions, be they words or sounds.

It should be kept in mind that nonverbal communication is not exhibited solely by the human race. Animals enact endless numbers of expressions that can be considered as being nonverbal. Dogs wag their tails when content and snarl when angry. Cats reveal their claws, lay back their ears, and arch their backs when angered. Likewise, horses, when

hostile, lay back their ears, uncover their teeth, and protrude their heads. (15:115-128) Many species of geese and fish perform intricate patterns of behavior which signify the release of aggression, courting gestures, and many others similar to behavior patterns of human beings. (53)

The expression of emotions in man and animals contribute to the final unleashing of feelings. Whether voluntarily or involuntarily controlled, whether verbally or nonverbally expressed, the nonverbal actions convey a message which is interpreted, almost universally, as the expression of a certain emotion.

Goffman's (29) approach to nonverbal facial expressions centered around the idea that social obligations are involved in communication. That is, in addition to one's being responsible for his own feelings and expressions of emotions, he is also obligated by societal pressures to act in a manner conducive to the well being of his companion. Some of this interaction is nonverbal in nature.

In the English-speaking cultures, Scheflen (48) has found that the people seem to utilize postural configurations or body positioning unconsciously for orienting themselves in a group. At a glance a great deal about what is going on with regard to interaction can be ascertained by observing

nonverbal behavior. A conscious knowledge and understanding of these postural functions could be of great value in the research regarding human behavior.

Fast (17) reiterated the importance of postural communication, especially in relation to behaviors depicting and revealing certain characteristics of male and female behavior. He considered that the language of the body certainly must be considered a complex and very intricate form of interaction.

Ruesch and Kees (47:46) referred to nonverbal actions as expressions of the inner state of the organism. This is to say that nonverbal behaviors are overt actions of inner feelings and emotions and are as understandable as words to those who understand them.

In his writings concerning the perception necessary for cross-cultural communication, Hall, who believed that "what people do is frequently more important than what they say," (31:15) expressed the following commitment to the importance of nonverbal communication:

> [The] formal training in the language, history, government, and customs of another nation is only the first step in a comprehensive program. Of equal importance is an introduction to the non-verbal language which exists in every country of the world and among the various groups within each country. Most Americans are only dimly aware of this silent language even though they use it every day. They

> are not conscious of the elaborate patterning of behavior which prescribes our handling of time, our spatial relationships, our attitudes toward work, play, and learning. In addition to what we say with our verbal language we are constantly communicating our real feelings in our silent language--the language of behavior. (31:10)

Hall pleaded for the development of the awareness of nonverbal behaviors to enhance communication within the American culture and among the many cultures of the world. He saw the improvement of intercultural communication as the major contributing force to improved foreign relations.

Birdwhistell (8), in his study of human body motion (kinesics), advanced the theory that the information conveyed by human gestures and movements is coded and patterned differently in various cultures. He developed an extremely intricate coding system for the study of human body movements. His theory, coding system, and implications were far more advanced than those previously developed. The use of the coding system, because of its complexity, must be questioned regarding its practicality for research in human behavior.

Hall and Birdwhistell have attempted to bring to light the importance of human communication--verbally and nonverbally. Total, effective communication seems almost impossible without an awareness and understanding of the nonverbal patterns which abound in the various cultures of

the world. Of utmost importance is the development of a sensitivity to the nonverbal patterns utilized by each individual in his own culture.

Galloway (26:4) stated that "nonverbal language means communication without words." This definition implied that behaviors are as significant as words and perhaps even more significant since nonverbal actions stress the how of communication rather than the what.

The how of communication seems so basic in context that it is often taken for granted. The importance of how one communicates must be considered, for if one wishes to communicate with another, the manner in which the point is presented is essential to the perception and understanding of the receiver. If one laughs as he relates an unhappy experience the receiver is not likely to perceive the unhappiness underlying the experience, but might instead think the story amusing and cheerful. It is necessary, then, for each person who wishes to communicate an idea or experience to be aware of his nonverbal actions and keep them congruent with his verbalization.

Mehrabian (41:331) studied the attitudes revealed through head and body movements of persons as they addressed others. His findings indicated that when information communicated nonverbally contradicts simultaneously communicated

verbal information it is the nonverbal information that predominates in the interpretation of the perceiver.

NONVERBAL TEACHER BEHAVIOR

In his research with classroom activities, Galloway (26:10), agreeing with Mehrabian, has found that when a contradiction occurs between a teacher's words and actions it is the nonverbal behaviors that are accepted as valid by the students. It would seem, then, that improving the act of teaching implies the need to study nonverbal events. For a teacher to be aware of his behavior constantly is a very difficult task. Since in the American society a premium is placed on verbal interaction, the teacher spends a great deal of time talking.

Flanders (18,19,20,44), probably the most noted researcher in the area of teacher behavior, has studied extensively the verbal interaction in classrooms. Howey (60) has summarized Flanders' data concerning classroom verbal interaction in relation to the amount of verbalization as follows:

> Flanders' data can be summarized in what is referred to as the rule of two-thirds--a rule derived from what the average classroom observed was like in terms of verbal interaction. The rule is that 2/3 of the time someone is a dominant speaker in the classroom, 2/3 of the time the someone is the

> teacher, and 2/3 of the time the teacher is lecturing, criticizing, or giving directions. (60:39)

The results of Flanders' findings have been made available to teachers, yet little has been done to change the manner in which the teacher actually relates to his students. Nonverbal behavior is often a part of the educational system which is ignored or not even considered. Those who concern themselves with nonverbal behavior must make an emphasis quite different from that practiced by many educators. They must emphasize what people do rather than what they say. To take nonverbal cues seriously necessitates a willingness to be open, to be more sensitive and perceptive in interpersonal relationships. A teacher can be encouraged to understand more meaningfully and to accept more openly the difficulties of being a teacher in any classroom setting. (27:71)

In discussing the behavioral cues in the classroom, Galloway (22:13) stated that children attending school are required to learn the nonverbal language of the classroom. Students are rarely taught to raise their hand to gain the teacher's attention, to line up in the hall, and to appear busy at their seats. The children are expected to comply with the behaviors which communicate to teachers that they know how to be students. Entering the subcultural environment of the school confronts the student with a nonverbal

language that may be as foreign to the child as a language from a different country. Indeed, if the child's background is from a different country, both the verbal and nonverbal components of communication are alien.

In an attempt to bring nonverbal language onto a more personal level, Galloway (25:63) stated that the nonverbal expressions of teachers often reflect their attitudes, motivations, and perceptions. It may be possible, then, for certain qualities of the teacher's personality to be revealed through nonverbal patterns. Further study would be necessary to verify this assumption.

Fowler (59) investigated the relationship of the attitudes and personality characteristics of teachers to the teacher-student rapport and emotional climate of the elementary classroom. Fifty-three teachers from three elementary schools in central South Carolina were subjects for the study.

The criterion data consisted of the Emotional Climate, Social Structure, and Verbal Emphasis of the Observation Schedule and Record; the atmosphere score and the total score of the Russell Sage Social Relations Test; Flanders' Interaction Analysis; the hostility and affection scores on the Hostility-Affection Scorecard; and the ranks on emotional climate given teachers by their principals. Predictor data

were a measure of teacher-student rapport--the Minnesota Teacher Attitude Inventory; fifteen scales of the Minnesota Multiphasic Personality Inventory; and the Discrepancy score on the Survey of Educational Leadership Practices which differentiates between actual and ideal teaching practices. (59:126-27)

Correlations were computed between the criteria and the predictors and these results were applied to twenty-seven null hypotheses. The results indicated the ability to objectively observe and record teacher and student behavior, the reliability of teacher behavior as indicative of teacher effectiveness, and the relationship of certain teacher behaviors to certain student behaviors.

Bookhout (58), in her study of the social-emotional climate of physical education classes, expressed the following opinion:

> It is doubtful that findings from research in the classroom may be applied to physical education since the latter takes place in the freer environment of the gymnasia and athletic fields, and uses movement as its learning medium. Yet the importance of a climate favorable to learning remains the same. There is need for observational research of physical education teachers to learn what behaviors exhibited by them are associated with climate formation, and especially to identify the behaviors associated with the formation of a supportive climate in physical education classes. (58:3)

Bookhout's study was designed to observe physical educators and to determine the patterns of teaching behavior which are related to climate formation in the physical education classroom. It was assumed that the teacher's behavior was a major influence in classroom climate formation and that such influencing behavior could be seen and heard by an observer. (58:72)

The subjects for the study consisted of thirty-six ninth grade girls' physical education classes and their respective women teachers in the public schools of North Carolina. The social-emotional climate score was assessed by means of Dr. Horace B. Reed's Pupil Inventory. Teacher behavior data were obtained from four thirty-minute observations of each teacher-class unit.

The findings indicated that according to the climate score determined for each class observed those classes could be charted on a climate continuum ranging from a supportive climate to a defensive climate. Supportive and defensive climate are defined by Bookhout in the following manner:

> A <u>supportive climate</u> is characterized by mutual acceptance among students and teacher, and by the perception of being accepted; by absence of anxiety; by freedom to initiate; by satisfaction with group membership; and by readiness to behave adaptively.
>
> A <u>defensive climate</u> is characterized by anxiety; a low degree of mutual acceptance; a feeling of not

> being accepted; submission to, or aggression against domination; fear that individual action will bring reprisal; reluctance to communicate; low affinity for the group. (58:7)

It would seem that a supportive climate would allow for more student freedom whereas a defensive climate would be more restrictive regarding the student.

Cogan (11) studied the relationship between warmth and friendliness in teachers and the amount of required work and self-initiated work performed by their pupils. A survey was administered to 987 eighth grade pupils. On the basis of this study these pupils' teachers, thirty-three in number and all of whom were experienced in teaching, were scored on three scales. The first scale measured the extent to which the teacher's behavior was warm and friendly. The second was a measure of dominating, aggressive, and rejecting behavior. The third scale measured the extent to which the teacher exhibited certain technical competencies such as skillful classroom management and the command of and creativeness in dealing with subject matter. Measures of the amount of required work and self-initiated work completed by each pupil were obtained from questionnaires given to both the pupils and their teachers.

Significant findings indicated that the more friendly and warm the teacher, the more required work and self-

initiated work completed by their pupils. Teachers who were rejecting had no positive influence on either the required or the self-initiated work. These findings suggest that pupil motivation is partially dependent upon certain qualities of the teacher's personality.

Flanders (18,19,20,44) has studied extensively the behavior of teachers and his category system is reviewed in the third section of this chapter. However, it is essential that Flanders' basic theoretical concept of teacher behavior be included at this point. His concept is based on the idea of indirect and direct teacher influence. Indirect influence increases the range of possible student responses, while direct influence decreases the number of alternative student responses.

Flanders (44:205-206) summarized research designed to identify different patterns of teacher influence into three generalizations. (20,54,40,13) A summary of those generalizations follows:

(1) Over a reasonable period of time both direct and indirect influence is used by all teachers, but the proportion of direct-to-indirect influence differs in teachers.

(2) Students of teachers who demonstrate a much higher proportion of directive influence than indirective influence (a) imitate the teacher and use more direct

influence in their own interaction; (b) tend to score lower on scales measuring positive attitudes toward the teacher, the class, and the learning experiences; (c) demonstrate less initiative and account for less student talk; and (d) are more easily distracted from their schoolwork.

(3) In classes where the teacher is perceived as being highly directive by the students, the classes report doing less required work than do students whose teachers are perceived as being below average in directiveness.

In the sense that Flanders' indirect influence tends to allow for the expansion of freedom in the classroom and direct influence restricts freedom, Bookhout's supportive climate would seem comparable to indirect influence with a defensive climate similar to direct influence. When considering the range of teacher influences, it must be kept in mind that no ideal proportion of direct-to-indirect, supportive-to-defensive behavior is existent for the teacher. Combinations of behaviors, verbal and nonverbal, are elicited in the classroom depending upon the specific need at the time.

Research results of teacher behavior must be interpreted with caution. It can be stated with some assurance, however, that research results indicate that, over an extended period of time, a below average proportion of direct-

to-indirect influence will establish more desirable pupil attitudes and superior patterns for work. (44:206)

The fact exists that both verbal and nonverbal communication are present in the environment of the classroom. In the past the attention of research has been mainly centered around the study of the verbal interaction in an educational setting. The language of no words has not even been wholly identified so consequently it has not been researched in detail. The need for improved teaching methods and open attitudes of the teacher toward students exists and must be met. Teachers must identify and examine their classroom behavior if advancements are to be made in classroom interaction, in the learning process.

Many teacher preparation institutions throughout the United States have realized the importance of studying teacher behavior and have incorporated the use of category systems for the analysis of teacher behavior into the practice teaching phase of their undergraduate curricula and into the very real setting of public school classrooms. (2,36,38, 45,56) At the University of Kentucky, for example, systematic observation of both verbal and nonverbal behaviors has become an important tool for the evaluation of students in the teacher preparation program. The verbal analysis has

helped students see the need for the development of greater flexibility in question-asking so that pupils are encouraged to think at different levels. Nonverbal analysis has helped prospective teachers see the need for the development of better ways of responding to students' ideas to encourage them to think more deeply. (36:180)

SYSTEMATIC OBSERVATION OF CLASSROOM INTERACTION

Category systems used for interaction analysis are based on the theory that a trained observer who has familiarized himself with the categories involved in the specific system can enter the classroom, listen to or view a taped teaching lesson and record the behavior of the subject. If the teacher is the subject, the results can then be interpreted for that individual teacher. Such a system may be beneficial since the teacher is often unaware of his own behavior. Once the behaviors, verbal and/or nonverbal, have been made apparent to the teacher, improvements can be made, and a forward step can be taken toward the improvement of classroom interaction.

Withall (54) developed a technique for measuring the social-emotional climate in the classroom by categorizing teachers' statements. He postulated that learning is most

likely to occur when experiences are meaningful to the learner and occur in a non-threatening situation. The basic assumptions of his study were that the teacher's behavior is the most important single factor in creating climate in the classroom, and that the teacher's verbal behavior is a representative sample of his total behavior.

Medley and Mitzel (40) designed an objective instrument, the Observational Schedule and Record (OScAR), to measure behaviors as they occurred in the classroom. Since subjective ratings had proved relatively unreliable they attempted to make an observation record which would eliminate any subjective evaluation on the part of the observer. They stated that relatively untrained observers could use the instrument and develop reliable information concerning differences in the classrooms of different teachers. The knowledge of such differences could then be used to discover one aspect of the nature of effective teaching.

Barrett (57) developed and tested a procedure for systematically describing teacher-student behavior in elementary physical education classes implementing the concept of movement education. The category system consisted of categories which described the teacher's verbal behavior and the students' movement response in that specific context.

Findings indicated that the system had the potential to be utilized as a teacher preparation tool for elementary physical education teachers, to develop greater insight into the current concept of movement education, and to instill a greater understanding in teachers in relation to their classroom behavior.

One of the most widely used category systems for the study of verbal interaction in the classroom is Flanders' Verbal Interaction Analysis. (20) This system has as its focus the verbal behavior of teachers. The system was developed to enhance a " . . . greater understanding of the teacher's role, the control he provides while teaching, and the pattern of influence he uses in classroom management." (20:2)

Of the ten categories included in the system, seven are concerned with teacher talk, two with student talk, and one with silence. The seven teacher talk categories are further defined as having either indirect or direct teacher influence. Indirect influence "encourages participation by the students and increases his freedom of action." (20:19) Direct influence "increases the active control of the teacher and often stimulates compliance." (20:21) Flanders' ten categories for verbal interaction analysis are outlined in Table I, page 27. (20:20)

TABLE I

FLANDERS' VERBAL INTERACTION ANALYSIS

TEACHER TALK; INDIRECT INFLUENCE:	
*1.	ACCEPTS FEELING: accepts and clarifies the feeling tone of the students in a nonthreatening manner. Feelings may be positive or negative. Predicting or recalling feelings are included.
*2.	PRAISES OR ENCOURAGES: praises or encourages student action or behavior. Jokes that release tension, not at the expense of another individual, nodding head or saying "um hm?" or "go on" are included.
*3.	ACCEPTS OR USES IDEAS OF STUDENT: clarifying, building, or developing ideas suggested by a student. As teacher brings more of his own ideas into play, shift to category 5.
*4.	ASKS QUESTIONS: asking a question about content or procedure with the intent that a student answer.
TEACHER TALK; DIRECT INFLUENCE:	
*5.	LECTURING: giving facts or opinions about content or procedures; expressing his own ideas, asking rhetorical questions.
*6.	GIVING DIRECTIONS: directions, commands, or orders to which a student is expected to comply.
*7.	CRITICIZING OR JUSTIFYING AUTHORITY: statements intended to change student behavior from non-acceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.
STUDENT TALK:	
*8.	STUDENT TALK-RESPONSE: talk by students in response to teacher. Teacher initiates the contact or solicits student statement.
*9.	STUDENT TALK-INITIATION: talk by students which they initiate. If "calling on" student is only to indicate who may talk next, observer must decide whether student wanted to talk. If he did, use this category.
SILENCE:	
*10.	SILENCE OR CONFUSION: pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.

*There is NO scale implied by these numbers. Each number is classificatory, it designates a particular kind of communication event. To write these numbers down during observation is to enumerate, not to judge a position on a scale. (20:20)

To gather data for Flanders' system, a trained observer sat in the classroom and recorded the classroom behavior every three seconds. At the end of each three-second interval the observer recorded in a column the category number (1-10) which corresponded with the behavior elicited at that instant. Recording in a column provided the observer with the actual sequence of behavior. (20:19) The sequence of behaviors were then paired and recorded in a 10 x 10 matrix to give a graphic representation of the frequency of occurrence of each behavior and the sequence that behavior followed. (20:33-43)

Howey (60:39) described Flanders' system as being "probably most valuable in that it is easily understood and can be used without extensive training by any teacher concerned with the socio-psychological dimension of their classroom behavior." He saw further value in the system's ability to be applied to tapes for teacher self-analysis, in addition to classroom observation by others.

Even though Flanders' category system is concerned with verbal interaction it has been reviewed due to its significant contribution to this study. The nonverbal category system incorporated in this study was adapted directly from Flanders' system and the philosophical and operational factors

inherent in the Flanders system were important to the Love and Roderick Nonverbal Category System.

Galloway (26) has developed a category system that takes into account the combination of verbal and nonverbal teacher behaviors. The system is an extension of Flanders' system and focuses on how the teacher acts rather than what the teacher says. Six pairs of antithetical characteristics are included in the system: (1) congruous-incongruous; (2) responsive-unresponsive; (3) positively affective-negatively affective; (4) attentive-inattentive; (5) facilitative-unreceptive; and (6) supportive-disapproving. The same procedures are followed as in Flanders' system for the recording of behaviors, but the results differ in that Galloway's system reveals the nonverbal behaviors of the teacher under investigation.

Heger's (33) Miniaturized Interaction Analysis System (Mini-TIA) was developed to permit improved analysis of classroom communication in conjunction with video taping. Seven verbal event categories were subdivided into two categories according to the nature of the nonverbal events paralleling them. Teachers were filmed while teaching and observers recorded the teacher's behaviors from these video taped lessons. Preliminary work with this category system

has shown that it is functional and effective in focusing the attention of education students on key behaviors.

The document, "Dimensions of Teaching," was examined in its entirety by Love and Roderick when they were attempting to identify nonverbal teacher behaviors for their category system. The basis for the selection of behaviors was that:

> . . . they were singular in meaning and in general were characteristic of human behavior. They further conveyed universal meanings rather than meaning being related to an individual's style and personality. (62:3)

The validity for the system was established by the "frequency" of the behaviors and the "universality of meaning in our culture." A reliability of .94 was established for the system by video taping "elementary and secondary teachers teaching" and then coding these tapes by "many observers." (61:1)

Love and Roderick's procedures for categorizing nonverbal teacher behavior stated that:

> Two steps were involved in the categorizing of nonverbal behavior of teachers. First, comparisons were made with Flanders' categories for analyzing classroom verbal interaction. Those nonverbal behaviors which paralleled the Flanders categories were classified there. Flanders' categories which had no parallel nonverbal behaviors were eliminated. Additional categories were created for those nonverbal behaviors not accommodated by the Flanders system. (62:3)

Flanders' basic concept of direct and indirect teacher influence was retained in the nonverbal category system. Categories one through five reflected indirect influence; Categories six through nine exhibited direct influence; and Category ten was not included as showing either indirect or direct influence.

Table II shows the nonverbal categories included in Love and Roderick's system with sample teacher behaviors for each category. (62:4)

The following are the ground rules established by Love and Roderick for the recording of nonverbal teacher behavior:

> (1) No value judgment was assigned to any nonverbal behavior.
>
> (2) Aimless walking and pacing back and forth were not tallied in this system.
>
> (3) Category one was distinguished from category two by looking at the context in which the nonverbal behavior occurred--if the nonverbal behavior served to say, 'I understand and I do not approve or disapprove,' it was category one as opposed to 'approving student behavior' which was category two.
>
> (4) Category eight was distinguished from category nine by looking at the nonverbal behavior in terms of a 'whole'--if the nonverbal behavior served to focus the student's attention on one part of the whole, it was category eight, as opposed to showing the student an entire concept which was category nine. For example, if a teacher shot a foul shot for a group of students, this was tallied in category nine, while if a

TABLE II

LOVE AND RODERICK'S SYSTEMATIC OBSERVATION OF TEACHER NON-VERBAL BEHAVIOR

NONVERBAL CATEGORIES AND SAMPLE TEACHER BEHAVIORS	
*1. Accepts Student Behavior	Smiles, affirmatively shakes head, pats on the back, winks, places hand on shoulder or head.
*2. Praises Student Behavior	Places index finger and thumb together, claps, raises eyebrows and smiles, nods head affirmatively and smiles.
3. Displays Student Ideas	Writes comments on board, puts students' work on bulletin board, holds up papers, provides for non-verbal student demonstration.
4. Shows Interest in Student Behavior	Establishes and maintains eye contact.
5. Moves to Facilitate Student-to-Student Interaction	Physically moves into the position of group member, physically moves away from the group.
*6. Gives Directions to Students	Points with the hand, looks at specified area, employs predetermined signal (such as raising hands for students to stand up), reinforces numerical aspects by showing that number of fingers, extends arms forward and beckons with the hand, points to student for answers.
*7. Shows Authority Toward Students	Frowns, stares, raises eyebrows, taps foot, rolls book on the desk, negatively shakes head, walks or looks toward the deviant, walks or looks away from the deviant, snaps fingers.

TABLE II (continued)

NONVERBAL CATEGORIES AND SAMPLE TEACHER BEHAVIORS	
8. Focuses Students' Attention on Important Points	Uses pointer, walks toward the person or object, taps on something, thrusts head forward, thrusts arm forward, employs a nonverbal movement with a verbal statement to give it emphasis.
9. Demonstrates and/or Illustrates	Performs a physical skill, manipulates materials and media, illustrates a verbal statement with a nonverbal action.
10. Ignores or Rejects Student Behavior	Lacks nonverbal response when one is ordinarily expected.

*The names of these categories are the same as those in the Flanders matrix. (62:4)

> teacher showed how to hold the ball for a foul shot, this was focusing on only part of the total act and was tallied in category eight.
>
> (5) The absence of a teacher nonverbal behavior when one would normally be expected was tallied in category ten--ignoring or rejecting student behavior. (62:5)

Recording procedures followed the natural order of occurrence. That is, each time a nonverbal behavior was elicited it was recorded by the observers. The nonverbal behaviors may have varied in duration, but only one tally was recorded for each individual nonverbal behavior. Each time a nonverbal behavior was repeated, a new tally was recorded.

Love and Roderick's nonverbal category system was developed for use in physical education classes. This factor along with the similarity to Flanders' system, the high degree of reliability, and inherent validity were essential to the decision to incorporate this system in the present study of the nonverbal teacher behavior of women physical educators on the university level.

The purpose of this study was not to determine the value that should be placed on the range of teacher behaviors, but rather to identify teacher nonverbal behaviors in the physical education theory class and activity class in relation to Flanders' concept of indirect and direct teacher influence.

SUMMARY

Nonverbal communication is by no means a new concept. Man has expressed emotions, attitudes, and ideas in nonverbal ways since his creation. However, very little research has been conducted in an attempt to discover the significance underlying nonverbal behavior patterns, especially in relation to the teacher's classroom behavior.

The research that has been conducted regarding teacher behavior has centered around the verbal interaction of the classroom. Little attention has been focused on the teacher's gestures, facial expressions, and classroom actions.

Since research has suggested that the teacher is the most influential person within the classroom atmosphere, further research is necessary to determine effective teacher behaviors. These behaviors must be studied in both the nonverbal and verbal contexts.

CHAPTER IV

PROCEDURES

The procedures involved in this study include the selection of subjects, the selection of the nonverbal category system, the video taping sessions, the collection of data, the training of judges, and the recording sessions. The statistical analysis of data, and the results and interpretations of the data are analyzed in Chapter V.

SELECTION OF SUBJECTS

The population of this study consisted of two women physical educators at The University of North Carolina at Greensboro. The subjects were Dr. Pearl Peterson, Visiting Lecturer, with eleven years of teaching experience, and Dr. Rosemary McGee, Professor, with twenty-two years of teaching experience.

The first step in selecting the sample was to determine the number of women members of the physical education staff who were teaching both a theory class and an activity class during the 1970-71 second semester term at The University of North Carolina at Greensboro. From this list

potential subjects were screened with regard to the schedule of their classes in relation to one another and in relation to the class schedule of the investigator. From the initial potential population of six teachers, two were chosen whose schedules did not conflict with each other or with the investigator. These two teachers were requested to participate in the study with the understanding that they were to conduct their classes as usual and that no specific adjustments were to be made to accommodate the study. The classes observed were: (Activity) a swimming class and a body mechanics class; (Theory) an adaptives class and a measurement and evaluation class.

SELECTION OF CATEGORY SYSTEM

Love and Roderick's Categories for Systematic Observation of Teacher Non-Verbal Behavior (62) was the measuring device used in this study. From the available nonverbal category systems, this system was found to be the most desirable in relation to this study. Five categories were involved which constitute indirect teacher influence and four which constitute direct influence.

Love and Roderick's system was developed directly from Flanders' (20) categories for analyzing verbal

interaction. Those nonverbal behaviors which paralleled the verbal categories were classified. Flanders' categories which had no parallel nonverbal behaviors were eliminated. Additional categories were created for those nonverbal behaviors not accommodated by the Flanders system. (62:3)

The Love and Roderick category system was originally developed by observing the nonverbal behaviors of teachers in elementary and secondary schools and recording their nonverbal behavior. The criteria for selecting a pattern as a sample nonverbal behavior were frequency and universality of meaning in the culture (validity). (61:1)

Elementary and secondary teachers were video taped by Love and Roderick while teaching and these tapes were then "coded by many observers in order to establish a reliability of .94 for [the] category system." (61:1) Table II (pages 32-33) shows the nonverbal categories and sample teacher behaviors of Love and Roderick's system.

In accordance with the purpose of this study, it was necessary to eliminate Category 10 (Ignores or rejects student behavior). The reason underlying the decision to eliminate this category was that Category 10 reflected neither indirect nor direct teacher influence as defined by Flanders. (20)

VIDEO TAPING PROCEDURES

The procedures necessary for video taping both the theory and the activity physical education classes included the selection of equipment, the development of a schedule for video taping, the selection of the layout, and the taping technique. Miss Nancy Porter, a member of the staff of the School of Health, Physical Education, and Recreation of The University of North Carolina at Greensboro, taught the investigator how to operate all of the necessary video taping equipment. Several combinations of the available equipment were utilized to determine the most efficient and most reliable for this study. The equipment used in the study was: SONY Videocamera, DVC-2400, DC 12V, No. 27781; SONY Videocorder, AV-3600; and SONY Videomonitor CVM-51UWP. The investigator filmed all of the classes to insure recording integrity and reliable use of the equipment and films. At no time during the taping sessions did the equipment fail to operate perfectly.

Two weeks of filming practice sessions were performed by the investigator to insure a thorough knowledge of filming and playback procedures. Teachers other than the subjects for the study were filmed during these practice sessions.

Both subjects were then filmed one time prior to the actual testing period in order to familiarize the teacher and the class with the video taping equipment and to desensitize the subjects. This observation period also allowed the investigator to select the proper point of observation for the camera.

Plans for the layout were developed and finalized with the assistance of Miss Porter. Attempting to inflict minimum disturbance within the class, the following criteria served as guides in developing the layout (57):

(1) The image of the teacher being taped must show good black and white contrast.

(2) The teacher's verbalization must be clearly audible at all times.

In meeting these criteria the following layout was developed:

(1) The camera and video tape recorder were placed as far from the class and teacher as possible. The monitor was not used during the filming sessions in order to reduce distraction of the subject and of the class.

(2) The microphone attached to the camera was sufficiently sensitive to the subject's voice, that it was not necessary to place a microphone anywhere near the subject.

The taping technique used was:

(1) In order to allow time for announcements and organization, the filming started five minutes after the class had begun. Once the taping began, it proceeded for thirty minutes with the lens in a position to keep only the subject in view. However, when the teacher moved into the group it was necessary to include those class members adjacent to her.

(2) The subjects and their students were aware that they were being taped but were unaware of the exact nature of the study.

It was decided that the same five-minute intervals of each thirty-minute lesson would be recorded by the judges. The first, third, and fifth five-minute intervals were recorded for each lesson.

The investigator reviewed each filmed lesson prior to the recording sessions in order to ascertain the clarity of the tapes, to double check the five-minute periods, and to record the verbalization time during the same five-minute intervals as were to be recorded with regard to nonverbal behavior by the judges. The previewing sessions further familiarized the investigator with the operation of the playback equipment (video tape recorder and monitor) and contributed to the expediency of the recording sessions.

COLLECTION OF DATA

The taping was scheduled Monday through Thursday, April 19, 1971 through May 5, 1971. The final taping schedule was established by selecting a three-week period suitable for the subjects, the judges and the investigator.

TABLE III

VIDEO TAPING SCHEDULE

MONDAY	TUESDAY	WEDNESDAY	THURSDAY
Teacher A:	Teacher A:	Teacher A:	Teacher A:
10:00 a.m., Activity	8:00 a.m., Theory	10:00 a.m., Activity	8:00 a.m., Theory
Teacher B:	Teacher B:	Teacher B:	Teacher B:
2:00 p.m., Theory	4:00 p.m., Activity	2:00 p.m., Theory	4:00 p.m., Activity

During the taping sessions of each of the twenty-four lessons, a stop watch was used to determine the first five minutes of the class. The watch was started when the teacher began the class and was stopped when five minutes had elapsed. At that moment the video tape recorder and camera were turned on and the teacher was filmed for thirty consecutive minutes. This thirty-minute period was measured by a predetermined investigation of the counter built into the recorder.

TRAINING OF JUDGES

Three women physical education graduate students at The University of North Carolina at Greensboro volunteered for training in the use of the nonverbal category system. None of the three had been previously exposed to Love and Roderick's system nor had they previously acted as judges recording teacher behavior. Mary Niekirk (Judge A) and Sandy Brugger (Judge C) both had two years of teaching experience and Roberta Howells (Judge B) had six years of teaching experience.

All three judges were given a copy of the category system for a two-week period and were asked to familiarize themselves with the system and to memorize the category numbers and the corresponding nonverbal behaviors. At the conclusion of the two-week period the training sessions began. Four training sessions were held for the recorders for two weeks for a period of two hours per session. During these sessions the judges practiced application of the category system to video tapes of physical education lessons from both activity and theory classes. At no time did the judges hear the audio portion of the tapes or practice on tapes made by either of the teachers taking part in the study. The practice tapes, filmed by the investigator,

included three different teachers and the taping technique followed was the same as that used in the study.

RECORDING SESSIONS

Due to a limited number of available thirty-minute and sixty-minute tapes, six recording sessions were held during and immediately following the three-week filming period. Video tapes that were used for filming the classes were immediately recorded so that they could be used again the following week. Because more tapes were available than had been anticipated during the scheduling of the recording sessions, neither the investigator nor the judges were unduly pressured by a definite time factor. Table IV (page 45) shows the order of the lessons, the order in which the tapes were recorded, the teacher filmed, the type of class, and the tape count of the recorded fifteen minutes. The order for the recording of tapes was established to eliminate any practice or fatigue factors that may have affected the judges.

Four tapes were recorded during each of the six sessions with a ten-minute break between the second and third tape. All taping sessions were held in the same room and during each session the judges sat at individual desks

TABLE IV

FACTORS INVOLVED IN THE RECORDING OF VIDEO TAPED TEACHING LESSONS

LESSON	RECORDING ORDER	TEACHER	CLASS	TAPE COUNT
1	1	A	Activity	0-136; 249-347; 435-515
1	2	B	Theory	590-660; 726-788; 846-902
1	4	A	Theory	0-136; 249-347; 435-515
1	3	B	Activity	590-660; 726-788; 846-902
2	2	A	Activity	0-136; 249-347; 435-515
2	1	B	Theory	0-136; 249-347; 435-515
2	3	A	Theory	0-136; 249-347; 435-515
2	4	B	Activity	590-660; 726-788; 846-902
3	1	A	Activity	0-136; 249-347; 435-515
3	2	B	Theory	590-660; 726-788; 846-902
3	4	A	Theory	0-136; 249-347; 435-515
3	3	B	Activity	0-136; 249-347; 435-515
4	2	A	Activity	0-136; 249-347; 435-515
4	1	B	Theory	0-136; 249-347; 435-515
4	3	A	Theory	0-136; 249-347; 435-515
4	4	B	Activity	590-660; 726-788; 846-902
5	1	A	Activity	0-136; 249-347; 435-515
5	2	B	Theory	590-660; 726-788; 846-902
5	4	A	Theory	0-136; 249-347; 435-515
5	3	B	Activity	590-660; 726-788; 846-902
6	2	A	Activity	0-136; 249-347; 435-515
6	1	B	Theory	590-660; 726-788; 856-902
6	3	A	Theory	0-136; 249-347; 435-515
6	4	B	Activity	590-660; 726-788; 846-902

in clear view of the monitor. The viewing position of the judges was rotated at the beginning of each session to insure equal visibility for each of the judges.

The teacher's nonverbal behavior was recorded every five seconds. The investigator sat at her own desk with a pen and a stop watch and indicated each fifth second by tapping the pen on the desk. After twelve taps (one minute) the pen was tapped twice and the judges then knew to record the next behavior on a new line. This procedure allowed the judges to view the monitor constantly and aleviated any anxiety about running off the recording sheet.

Each time the pen tapped the judges recorded the teacher's nonverbal behavior. If more than one behavior was being elicited at that instant more than one recording was made. If, at the time of the tap, a behavior other than that defined by the category system was observed, the judges recorded a 0.

The audio portion of the tapes was turned off during the recording sessions in order to allow the judges to concentrate on the nonverbal behavior of the teachers. At no time did the judges hear the audio portion of the tapes.

STATISTICAL TECHNIQUES

Interjudge Agreement

Interjudge agreement represented the extent to which different trained judges could observe teachers' nonverbal behavior and agree upon what they saw when recording independently the same video taped physical education lesson. Two statistical techniques were utilized with two different sets of data in order to establish interjudge agreement.

The Pearson product-moment coefficient of correlation formula for original raw score data was the first technique applied to the judges' scores. Four master tally sheets were prepared from the judges' recordings of nonverbal teacher behavior. One sheet represented Teacher A's six activity lessons, the second represented Teacher A's theory lessons, the third was Teacher B's activity lessons, and the fourth represented Teacher B's theory lessons. Each of the judge's recordings for the respective teacher, nonverbal category, and lesson was tallied on the master sheets. The judges' results were then easily accessible for statistical evaluation. Tables XVIII, IXX, XX, and XXI, in the Appendixes, illustrate the results of the judges' recordings. The judges' raw scores for each teacher in each teaching situation (activity and theory) were then recorded, paired and correlated.

Another Pearson correlation was then computed from the judges' raw scores with one major adjustment made regarding the scores. It was determined that in several instances the judges had agreed that no nonverbal behavior occurred which paralleled specific Love and Roderick categories. This 100 per cent agreement was not reflected in the first Pearson correlation technique. Therefore, the number one (1) was added to each zero (0) score and to each raw score recorded by the judges. Considering the fact that this statistical computation was based on the judges' 100 per cent agreement that a certain behavior was not displayed, these data will henceforth be referred to operationally as 100 per cent agreement raw score data. These data were then recorded, paired, and correlated.

The second statistical technique applied to the judges' data was a percentage of agreement formula developed by Scott (49) and utilized by Howie (60) and Barrett (57). The formula used was $\frac{X}{Y}$, where X = the total number of judge agreements and Y = the total number of recordings made by the two judges. (49:102; 60:322; 57:149) An example of the compilation of X and Y follows: Judge A had the following number of recordings in four categories: 8,9,3, and 6. In the same four categories Judge B had recordings of: 8,7, 4, and 8. The first category was identical; Judge A had the higher score in the second category, 9; Judge B had the

higher number of recordings in the next two categories, 4 and 8. The four higher entries in each category, regardless of judge, were 8,9,4, and 8 which total 29. The lower four numbers were 6,7,3, and 6 which total 22. The number 29 represents the total number of recordings and the number 22 represents the number of agreements. When 29 is divided into 22, the per cent of agreement is 76.

The same two sets of raw score data, original and 100 per cent agreement, were treated by the percentage of agreement formula. The percentages of agreement were determined for each of the judges regarding each teacher in the two teaching situations.

Intrajudge Agreement

Intrajudge agreement revealed the extent of consistency each judge had with himself when observing the same video taped lessons at two different times. The three judges viewed two randomly selected five-minute video tape sections of previously viewed physical education lessons. The results of each judge's recordings of the second viewing were compared with his scores on the first viewing in order to establish a percentage of intrajudge agreement. The same procedures were followed as those used to compute interjudge per cent of agreement.

Analysis of Variance

In order to determine whether a significant difference existed between a physical educator's use of both indirect and direct nonverbal behavior in college physical education classes, an analysis of variance was computed from the judges' recordings of nonverbal behaviors. After an examination of the judges' recordings of nonverbal behavior in relation to Love and Roderick's category system, it was noted that, due to the absence of any recordings by the judges in certain categories, two nonverbal categories would not be reflected in the statistical computations. Category 2 (Praises student behavior) and Category 7 (Authority shown by teacher) were the two categories eliminated.

Possible reasons for the absence of such nonverbal behaviors in this study are that: (1) it was difficult to distinguish between Category 1 (Accepts or sanctions student behavior) and Category 2 (Praises student behavior); and (2) Love and Roderick's category system was validated on the elementary and secondary levels where more discipline is required and where more authority is shown by the teachers. Therefore, the number of categories computed in the analysis of data was decreased from the original nine categories to seven categories.

The judges' recordings of nonverbal teacher behavior in each category were totaled for the activity classes and theory classes of both teachers. These totals were then grouped according to Teacher A or Teacher B, indirect (Categories 1, 3, 4, and 5) or direct (Categories 6, 8, and 9) nonverbal behavior and activity class or theory class. These groupings were considered as the factors which influenced teachers' nonverbal behavior in this study. A three-way analysis of variance was then run on the data.

The Scheffé Test was applied to the mean scores of the significant factors influencing nonverbal teacher behavior in order to ascertain quantitative significance between the amount of indirect and direct nonverbal behavior elicited by the teachers.

A second analysis of variance was computed from the same judges' scores. However, the total of the judges' scores were analyzed in relation to each of the seven nonverbal categories rather than by groupings of indirect and direct nonverbal influence. Therefore, the three-way analysis was grouped with regard to Teacher A or Teacher B; Category 1,3,4,5,6,8,9; and activity class or theory class. This procedure made it possible to identify significant differences in relation to the specific nonverbal categories.

Results significant at the 1 per cent level of confidence were then treated by the Scheffe Test which compared the means of the statistically significant data in order to locate the specific data, causing a meaningful "F" ratio. The mean score of each nonverbal category was compared with the mean score of the remaining six categories. This test provided the data necessary to determine the source of the significant difference.

Indirect-to-Direct Nonverbal Ratio

In addition to the analyses of variance, a ratio of indirect-to-direct nonverbal teacher behavior was computed. The formula utilized was $\frac{X}{Y}$, where X = the amount of indirect nonverbal behavior and Y = the amount of direct nonverbal behavior. (36:178-179) The resultant represented the amount of indirect behavior that occurred for each direct behavior that occurred. For example, if the total number of recordings of indirect nonverbal behavior for Teacher A in the activity class was 2000 and the total of direct nonverbal behavior was 1000, the ratio of indirect-to-direct behavior would be $\frac{2000}{1000}$ or 2.00. This ratio indicates that for each direct nonverbal behavior, two indirect nonverbal behaviors were utilized.

To compute the ratios, the judges' scores were totaled for both teachers in both teaching situations in regard to the total amount of indirect and direct nonverbal behavior.

Indirect-to-Direct Percentage

A percentage of both indirect and direct nonverbal behavior patterns for the total recording time was computed for each teacher in both the activity and theory class situations. The percentage of indirect behavior for each teacher in each of the class situations was determined by dividing the total number of judges' recordings into the total number of indirect nonverbal recordings. The percentage of direct behavior was computed by dividing the total number of recordings into the number of direct recordings. (36:178-179).

An example of this procedure follows: The judges recorded a total of 2,000 nonverbal behaviors for Teacher A's six activity lessons. Of this total, 1,500 recordings were indirect nonverbal patterns and 500 were direct nonverbal patterns. The percentage of indirect nonverbal behavior is determined by dividing 2,000 into 1,500. The results indicate that 75 per cent of Teacher A's nonverbal behavior in the activity classes was indirect in nature.

The percentage of direct influence is determined by dividing 2,000 into 500, resulting in 25 per cent direct nonverbal influence.

The resulting percentages were treated statistically in order to determine whether a significant difference existed between the indirect and direct percentages in the four class situations under examination.

Amount of Teacher Verbalization

In addition to the nonverbal record, as a point of interest, the amount of teacher verbalization was recorded on the audio-video tape in order to determine the amount of verbalization during the recording period. Each teacher's verbalization time was recorded for each activity lesson and each theory lesson.

The statistical technique applied to these data were "t" tests for the difference between means. Teacher A's verbalization time in each activity lesson was compared to that of Teacher B. The test was repeated for the verbalization time of the two teachers in each theory lesson.

CHAPTER V

ANALYSIS AND INTERPRETATION OF DATA

PURPOSE

The purpose of this study was to record, via video tape, and categorize the nonverbal teacher behavior of two women physical educators at The University of North Carolina at Greensboro. The study was designed to determine if specific class organization affects the nonverbal patterns of teachers. The nonverbal teaching behavior patterns were analyzed using the Love and Roderick nonverbal category system. Each teacher was observed and her behavior categorized while teaching both a theory class and an activity class for a three-week period. Observation (filming) took place two times per week for three successive weeks in each of the four classes involved in the study.

In addition to the nonverbal record, as a point of interest the teachers' verbalization was recorded on the audio-video tape in order to determine the amount of verbalization during the recording period.

ANALYSIS OF DATA

The analysis of data includes the discussion of interjudge agreement, intrajudge agreement, and the analyses of results in relation to the null hypotheses. The procedures for estimating these data were presented in Chapter IV.

Interjudge Agreement

The interjudge agreement was examined using two different statistical techniques under two separate conditions. The techniques used were the Pearson product-moment correlation coefficient formula for original raw score data and the percentage of agreement formula. The two sets of data treated consisted of (1) the judges' raw scores for each category; and (2) the judges' raw scores for each category figuring 100 per cent agreement.

Interjudge agreement was considered acceptable if the percentage of agreement was 85 per cent or higher. The selection of this percentage was based on the percentages of agreement recommended by Flanders (20), 85 per cent, and Barrett (57), 80 per cent; and achieved by Bellack et al. (6), 84 to 96 per cent, and Howey (60), 73 to 95 per cent.

The correlations of interjudge agreement for the pairings of the three judges' scores are presented in Table B, page 57. Represented in the table are the raw score

TABLE V

RAW SCORE CORRELATIONS OF
INTERJUDGE AGREEMENT

Teacher A ACTIVITY			Teacher B ACTIVITY			Teacher A THEORY			Teacher B THEORY		
Judges:											
(AB)	(AC)	(BC)	(AB)	(AC)	(BC)	(AB)	(AC)	(BC)	(AB)	(AC)	(BC)
.9839	.9869	.9896	.9943	.9796	.9774	.9659	.9601	.9906	.9843	.9928	.9674

correlations of interjudge agreement for Teacher A and Teacher B in the activity and the theory classes. The resulting positive correlations, each of which is based on the judges' recordings of six taped lessons, range from a low of .9601 to a high of .9943.

Correlation techniques were repeated on the 100 per cent agreement raw score data and these results are presented in Table VI, page 59. These results are somewhat higher than the raw score data, ranging from a low of .9746 to a high of .9963.

These correlations of .9601 and above indicate that the judges agreed upon what they saw while observing teachers' nonverbal behavior in physical education theory and activity classes.

Percentages of agreement for the pairings of the three judges were computed. Table VII, also on page 59, presents the raw score percentages; and Table VIII, page 60, illustrates the 100 per cent agreement raw score percentages. These results again indicate a high level of agreement among the judges with a low raw score data percentage of 85 per cent and a high of 90 per cent; and a low 100 per cent agreement raw score percentage of 85 per cent and a high of 91 per cent.

TABLE VI

100% AGREEMENT RAW SCORE CORRELATIONS
OF INTERJUDGE AGREEMENT

Teacher A ACTIVITY			Teacher B ACTIVITY			Teacher A THEORY			Teacher B THEORY		
Judges: (AB)	(AC)	(BC)	(AB)	(AC)	(BC)	(AB)	(AC)	(BC)	(AB)	(AC)	(BC)
.9877	.9927	.9922	.9945	.9933	.9915	.9792	.9746	.9963	.9874	.9950	.9891

TABLE VII

RAW SCORE PERCENTAGES OF
INTERJUDGE AGREEMENT

Teacher A ACTIVITY			Teacher B ACTIVITY			Teacher A THEORY			Teacher B THEORY		
Judges: (AB)	(AC)	(BC)	(AB)	(AC)	(BC)	(AB)	(AC)	(BC)	(AB)	(AC)	(BC)
86	89	88	89	89	88	86	85	88	86	90	86

TABLE VIII

100% AGREEMENT RAW SCORE PERCENTAGES
OF INTERJUDGE AGREEMENT

Teacher A ACTIVITY			Teacher B ACTIVITY			Teacher A THEORY			Teacher B THEORY		
Judges: (AB)	(AC)	(BC)	(AB)	(AC)	(BC)	(AB)	(AC)	(BC)	(AB)	(AC)	(BC)
86	90	89	89	89	88	86	85	89	86	91	86

Intrajudge Agreement

To indicate the extent of consistency each judge had with himself when observing the same video taped lessons at two different times, intrajudge agreement was estimated. These percentages are presented in Table IX, below. A percentage of 85 was again considered acceptable. The percentages of intrajudge agreement ranged from a low of 86 per cent to a high of 97 per cent and were all found to be acceptable.

TABLE IX

PERCENTAGES OF INTRAJUDGE AGREEMENT

TEACHER	CLASS	JUDGE A	JUDGE B	JUDGE C
A	Theory	97	95	93
B	Activity	90	90	86

Analysis of Variance

In order to determine whether a significant difference existed between physical educators' use of both indirect and direct nonverbal behavior in college level activity and theory classes, a three-way analysis of variance was computed. The following null hypotheses were formulated:

(1) There is no difference between the amount of physical educators' use of indirect nonverbal behavior in a college level physical education theory class and an activity class.

(2) There is no difference between the amount of physical educators' use of direct nonverbal behavior in a college level physical education theory class and an activity class.

(3) There is no difference between the amount of physical educators' use of indirect and direct nonverbal behavior in either a college level physical education theory class or an activity class.

The interactions influencing nonverbal teacher behavior are found in Table X, page 63. An "F" ratio of .2078 revealed no statistically significant difference between physical educators' use of indirect nonverbal behavior in a theory class and an activity class and no significant difference between physical educators' use of direct nonverbal behavior in a theory class and an activity class. Therefore, hypotheses (1) and (2) were found tenable.

An "F" ratio of 25.58 revealed a statistically significant difference at the 1 per cent level of confidence between physical educators' use of indirect and direct nonverbal behavior in college level physical education theory and activity classes. These findings indicate that hypothesis (3) was untenable.

TABLE X

THREE-WAY ANALYSIS OF VARIANCE AND THEIR ASSOCIATED INTERACTIONS INFLUENCING NONVERBAL TEACHER BEHAVIOR

SOURCE OF VARIANCE	df	Ss	Ms	F
Between Activity and Theory	1	1,598.49	1,598.49	.0791
Between Indirect and Direct Nonverbal Behavior	1	537,121.06	537,121.06	25.58[a]
Between Teacher A and Teacher B	1	1,868.28	1,868.28	.0924
Indirect/Direct Activity/Theory	1	4,200.96	4,200.96	.2078
Indirect/Direct Teacher A/Teacher B	1	5,414.87	5,414.87	.2679
Activity/Theory Teacher A/Teacher B	1	2,736.22	2,736.22	.1353
Indirect-Direct Activity/Theory Teacher A/Teacher B	1	29,303.88	29,303.88	1.45
Within	95	1,919,800.57	20,208.43	

[a] F significant at the .01 level. (6.91)

The results of the Scheffe Test, for comparison of significant means influencing nonverbal teacher behavior, are presented in Table XI, below. An "S" of 53.27 at the 1 per cent level of confidence revealed that the mean score of indirect nonverbal behavior was statistically significantly greater than that of direct nonverbal behavior. Therefore, a greater amount of indirect nonverbal teacher behavior was utilized than direct nonverbal behavior.

TABLE XI

COMPARISON OF SIGNIFICANT MEANS INFLUENCING NONVERBAL TEACHER BEHAVIOR

FACTORS	SIGNIFICANT MEANS	MEAN DIFFERENCE	S
Indirect	210.96	147.09	53.27[a]
Direct	63.87		

[a]S significant at .01 level. (6.91)

In order to determine the exact nature of the significant difference between indirect and direct nonverbal teacher behavior, a second three-way analysis of variance was computed. This second analysis treated the judges' recordings in relation to each of the seven nonverbal categories.

The analysis of the associated interactions influencing indirect and direct nonverbal teacher behavior are

illustrated in Table XII, page 66. It is evident, from the "F" ratio of 70.85, that the difference between the seven nonverbal behaviors is statistically significant at the 1 per cent level of confidence.

The Scheffe Test, for comparison of significant means, was applied to the significant data. The source of significance is illustrated in Table XIII, page 67. That Category 4 was different from each of the other six categories at the 1 per cent level of statistical confidence, is revealed by "S's" ranging from a low of 14.88 to a high of 79.14.

Indirect-to-Direct Ratio

Further indication of the difference between the use of indirect and direct nonverbal teacher behavior was revealed by the computation of an indirect-to-direct ratio. Table XIV, page 67, illustrates the ratios of indirect-to-direct nonverbal behavior for each teacher in each of the class situations. The ratios range from a low of 2.07 to a high of 4.35 indirect nonverbal behaviors utilized for each direct behavior utilized. It is evident that a greater amount of indirect nonverbal behavior was displayed in both the activity and the theory classes.

TABLE XII

THREE-WAY ANALYSIS OF VARIANCE AND THEIR ASSOCIATED FACTORS INFLUENCING INDIRECT AND DIRECT NONVERBAL TEACHER BEHAVIOR

SOURCE OF VARIANCE	df	SS	MS	F
Between Activity and Theory	1	15.11	15.11	.0420
Between 7 Nonverbal Categories	6	15,267.06	25,445.34	70.85[a]
Between Teacher A and Teacher B	1	200.68	200.68	.5587
Nonverbal Behavior Activity/Theory	6	290.80	48.47	.1349
Nonverbal Behavior Teacher A/Teacher B	6	708.68	118.11	.3288
Activity/Theory Teacher A/Teacher B	1	102.96	102.96	.2866
Nonverbal Behavior Activity/Theory Teacher A/Teacher B	6	1,134.91	189.15	.5266
Within	277	99,482.76	359.14	

[a] F significant at .01 level. (2.88)

TABLE XIII

COMPARISON OF SIGNIFICANT MEANS OF NONVERBAL CATEGORIES INFLUENCING INDIRECT AND DIRECT NONVERBAL TEACHER BEHAVIOR

FACTORS	SIGNIFICANT MEANS	MEAN DIFFERENCE	S
Category 4/Category 8	131.33/35.60	95.73	14.88[a]
Category 4/Category 1	131.33/15.51	115.82	21.15[a]
Category 4/Category 9	131.33/14.54	116.79	21.78[a]
Category 4/Category 3	131.33/ 3.00	128.33	46.03[a]
Category 4/Category 6	131.33/ 2.38	128.95	51.56[a]
Category 4/Category 5	131.33/ 1.00	130.33	79.14[a]

[a]S significant at .01 level. (2.88)

TABLE XIV

RATIOS OF INDIRECT-TO-DIRECT NONVERBAL TEACHER BEHAVIOR

TEACHER	CLASS	INDIRECT-DIRECT RATIO
A	Activity	2.07
B	Activity	4.35
A	Theory	3.43
B	Theory	3.07

Indirect-to-Direct Percentage

In order to illustrate, in another way, the amount of indirect and direct nonverbal teacher behavior displayed by each teacher in each class situation, an indirect-to-direct percentage was computed. The percentage of indirect behavior for each teacher in each of the class situations was determined by dividing the total number of judges' recordings into the total number of indirect recordings. The percentage of direct behavior was computed by dividing the total number of recordings into the number of direct recordings. (36:178-179)

Table XV, page 69, reveals these percentages in relation to each teacher in each class situation. The fact that a greater amount of indirect nonverbal behavior was displayed in the four class situations is revealed by percentages of indirect behavior ranging from 68 to 81. The four critical ratios were found to be statistically significant at the 1 per cent level of confidence ranging from 20.93 to 30.85.

Teacher Verbalization

As a point of interest, the amount of teacher verbalization was recorded and analyzed in regard to the difference between Teacher A and Teacher B's verbalization time for each lesson. Table XVI, page 70, presents the amount of time each

TABLE XV

PERCENTAGES AND CRITICAL RATIOS OF INDIRECT-TO-DIRECT NONVERBAL TEACHER BEHAVIOR

TEACHER	CLASS	% OF INDIRECT	% OF DIRECT	CRITICAL RATIO
A	Activity	68	32	20.93[a]
B	Activity	81	19	30.85[a]
A	Theory	77	23	26.60[a]
B	Theory	75	25	28.57[a]

[a]CR significant at .01 level. (2.58)

TABLE XVI

AMOUNT OF TEACHER VERBALIZATION
DURING FIFTEEN MINUTE
CLASS SECTIONS

TEACHER A Activity		TEACHER B Activity		TEACHER A Theory		TEACHER B Theory	
Lesson	Verbalization	Lesson	Verbalization	Lesson	Verbalization	Lesson	Verbalization
#1	11 min., 3 sec.	#1	7 min., 47 sec.	#1	14 min., 48 sec.	#1	8 min., 38 sec.
#2	11 min., 21 sec.	#2	7 min., 36 sec.	#2	12 min., 59 sec.	#2	8 min., 7 sec.
#3	10 min., 0 sec.	#3	8 min., 56 sec.	#3	9 min., 34 sec.	#3	11 min., 9 sec.
#4	8 min., 1 sec.	#4	7 min., 15 sec.	#4	14 min., 37 sec.	#4	10 min., 19 sec.
#5	13 min., 8 sec.	#5	6 min., 41 sec.	#5	13 min., 11 sec.	#5	9 min., 14 sec.
#6	12 min., 39 sec.	#6	8 min., 14 sec.	#6	11 min., 34 sec.	#6	11 min., 18 sec.

teacher talked in each lesson during the same fifteen minutes of class time that were recorded nonverbally. The range of teacher talk is from 6 minutes, 41 seconds to 14 minutes, 48 seconds.

The "t" ratios of the difference between means of the teachers' verbalization time are illustrated in Table XVII, below. The results revealed that a statistically significant difference existed between the amount of verbalization by Teacher A and Teacher B. The "t" ratios of 78.36 for theory classes and 138.37 for activity classes are both statistically significant at the 1 per cent level of confidence.

TABLE XVII

DIFFERENCES BETWEEN MEANS OF TEACHERS' VERBALIZATION TIME IN FIFTEEN-MINUTE SECTIONS OF ACTIVITY CLASSES AND OF THEORY CLASSES

TEACHER	CLASS	N (LESSONS)	MEAN SCORE	"t" RATIO
A	Activity	6	11.09	138.37[a]
B	Activity	6	7.52	
A	Theory	6	12.54	78.36[a]
B	Theory	6	9.68	

[a] "t" significant at the .01 level. (4.03)

INTERPRETATION OF DATA

Interjudge agreement was considered acceptable if the percentage of agreement was 85 or higher. The selection of this percentage was based on the percentages of agreement recommended by Flanders (20), 85 per cent, and Barrett (57), 80 per cent; and achieved by Bellack et al. (6), 84 to 96 per cent, and Howey (60), 73 to 95 per cent.

The percentages of interjudge agreement were never lower than 85 and varied only from 85 to 91. The correlations of interjudge agreement were .9601 and above. These results indicate that the three judges agreed upon what they saw while observing and recording the nonverbal behavior of teachers from the same video taped physical education lessons.

The percentages of intrajudge agreement were also considered acceptable at percentages of 85 and above. (20, 57,6,60) The percentages of intrajudge agreement were never lower than 86. There was greater variability in intrajudge agreement than there was in interjudge agreement reported previously, since the range of intrajudge agreement was from 86 to 97 per cent. Howey's (60) findings indicated a range of interjudge agreement from 83 to 91 per cent and a range of intrajudge agreement from 76 to 94 per cent. The results of interjudge and intrajudge agreement in this study were

consistent with the results of Howey's in regard to the ranges of percentage of interjudge and intrajudge agreement.

The results of interjudge and intrajudge agreement indicate that the three judges were sufficiently trained in the usage of the nonverbal category system and that their recordings were acceptable and consistent.

The three-way analyses of variance revealed that the following null hypotheses were tenable:

(1) There is no difference between the amount of physical educators' use of indirect nonverbal behavior in a college level physical education theory class and an activity class.

(2) There is no difference between the amount of physical educators' use of direct nonverbal behavior in a college level physical education theory class and an activity class.

These results suggest that the difference between teachers' nonverbal behaviors in the classroom and in the gymnasium and swimming pool may not be as significant as has been postulated in the past.

The same analyses of variance revealed that the following null hypothesis was untenable:

(1) There is no difference between the amount of physical educators' use of indirect and direct nonverbal

behavior in either a college level physical education theory class or an activity class.

The findings indicate that a statistically greater amount of indirect nonverbal behavior was utilized by the teachers in both the theory classes and the activity classes. The mean scores, I-D ratios, and I-D percentages further substantiated the findings in regard to the greater use of indirect than direct nonverbal teacher behavior in the college level physical education theory classes and activity classes observed in this study.

Considering the similarity between Flanders' (20) indirect and direct teacher influence and Bookhout's (58) supportive and defensive climate, it would seem that, in the classrooms, the gymnasium, and the swimming pool under investigation, the climate was predominately supportive (indirect). This would indicate that the atmosphere of the classes studied was conducive to the establishment of desirable pupil attitudes and meaningful patterns for work and that the nonverbal behaviors displayed by the teachers were not statistically significant in regard to the type of class being taught.

Additional treatment of the factors influencing nonverbal teacher behavior revealed that the source of

significance between the use of indirect and direct nonverbal teacher behavior was Category 4 (Shows interest in students). This category reflected the only statistical significance between behaviors, but did in fact, reveal that significance at the 1 per cent level of confidence with each of the remaining six categories.

As a point of interest, the amount of teacher verbalization was recorded and analyzed for each of the twenty-four, fifteen minute, recorded teaching lessons. The results indicated a statistically significant difference between the amount of teacher talk utilized by Teacher A and Teacher B in both the theory and activity classes. However, no statistical significance was indicated by the analyses of variance in regard to the difference between the nonverbal patterns of Teacher A and Teacher B. This fact may reflect essential information regarding the relationship of verbal and nonverbal teacher behaviors. It would seem, considering these results, that there may be no relationship between the amount of teacher talk and the amount and nature of teacher nonverbal behavior.

CHAPTER VI

SUMMARY AND CONCLUSIONS

The purpose of this study was to record, via video tape, and categorize the nonverbal behavior of two women physical educators at The University of North Carolina at Greensboro. The study was designed to determine if specific class organization affects the nonverbal patterns of teachers. The nonverbal teaching behaviors were analyzed using the Love and Roderick nonverbal category system. Each teacher was observed and her behavior categorized while teaching both a theory class and an activity class for a three-week period. Observation (filming) took place two times per week for three successive weeks in each of the four classes involved in the study.

Analyses of the three judges' recordings resulted in the following conclusions:

(1) The three judges agreed upon what they saw while observing and recording the nonverbal behaviors of teachers from the same video taped physical education lessons.

(2) The three judges were consistent in their ability to observe and record the nonverbal behavior of college level physical education teachers.

(3) There was no statistically significant difference between the amount of physical educators' use of indirect nonverbal behavior in a college level physical education theory class and an activity class.

(4) There was no statistically significant difference between the amount of physical educators' use of direct nonverbal behavior in a college level physical education theory class and an activity class.

(5) There was a statistically significant difference between the amount of physical educators' use of indirect and direct nonverbal behavior in either a college level physical education theory class or an activity class.

(6) A statistically significantly greater amount of indirect nonverbal behavior was displayed than direct nonverbal behavior by both teachers in both class situations.

(7) Category 4 (Shows interest in students) of Love and Roderick's nonverbal category system included the nonverbal behaviors displayed most frequently by the teachers.

(8) Due to the greater proportion of indirect nonverbal behavior displayed by the teachers it can be conjectured that, according to the findings of verbal teacher behavior, the atmosphere of the classes studied was conducive to the establishment of desirable pupil attitudes and meaningful patterns for work.

(9) A statistically significant difference was found between the amount of verbalization displayed by Teacher A and Teacher B.

These results indicate that the nonverbal behaviors of women physical educators at the college level can be observed, recorded, examined, and statistically treated in order to contribute findings to the study of teacher behavior. Continued research in this area is essential for the improvement of education.

SUGGESTIONS FOR FURTHER STUDY

Since no difference was found between the use of both indirect and direct nonverbal behaviors in college level physical education theory and activity classes, further study could be conducted between the nonverbal patterns of teachers in physical education theory classes and theory classes of other subject areas. Extensive research along

such lines could reveal the differences and/or similarities between the nonverbal behaviors of teachers in specific subject areas.

Further nonverbal research could be conducted in relation to teachers' personalities, teacher-student social distance, coaches' won-loss records in athletics and the relationship between verbal and nonverbal teacher behavior. The area of teacher behavior research is growing with implications for more effective classroom interaction, more sensitive teacher-pupil understanding, and improved teaching methods. If education is to progress, the behavior of teachers must be identified, studied, and improved when necessary.

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APPENDIXES

APPENDIX A

MASTER TALLY SHEET OF JUDGES' RECORDINGS OF NONVERBAL BEHAVIOR OF TEACHER A's ACTIVITY CLASSES

TABLE XVIII

MASTER TALLY SHEET OF JUDGES' RECORDINGS OF NONVERBAL BEHAVIOR FOR TEACHER A's ACTIVITY CLASSES

	LESSON ONE			LESSON TWO			LESSON THREE			LESSON FOUR			LESSON FIVE			LESSON SIX		
JUDGE:	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
1. Accepts or sanctions student behavior.	1	0	1	1	1	2	9	3	7	2	0	1	0	1	5	6	2	10
2. Praises student behavior.																		
3. Uses student ideas.																		
4. Shows interest in student behavior.	87	81	82	66	79	80	148	152	150	175	168	178	117	140	137	166	138	148
5. Withdrawing to permit pupil-to-pupil interaction.	1	2	3															
6. Directions given by the teacher.	1	2	0	2	0	0							0	1	1	5	1	2
7. Authority shown by the teacher.																		
8. Focuses student's attention on important points.	20	30	24	20	22	20	37	35	26	22	29	21	58	58	68	68	54	61
9. Demonstration.	5	1	4	28	31	28	6	4	8	2	0	2	58	75	48	43	53	41

APPENDIX B

MASTER TALLY SHEET OF JUDGES' RECORDINGS OF NONVERBAL BEHAVIOR OF TEACHER B's ACTIVITY CLASSES

TABLE IXX

MASTER TALLY SHEET OF JUDGES' RECORDINGS OF NONVERBAL BEHAVIOR FOR TEACHER B's ACTIVITY CLASSES

	LESSON ONE			LESSON TWO			LESSON THREE			LESSON FOUR			LESSON FIVE			LESSON SIX		
JUDGE:	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
1. Accepts or sanctions student behavior.	11	8	3	23	17	36	31	17	39	25	26	38	23	18	41	18	10	16
2. Praises student behavior.																		
3. Uses student ideas.																		
4. Shows interest in student behavior.	160	170	171	116	120	118	150	148	149	127	126	117	154	142	145	160	156	156
5. Withdrawing to permit pupil-to-pupil interaction.																		
6. Directions given by the teacher.	6	1	6	4	2	4	2	0	0				1	0	0	2	4	3
7. Authority shown by the teacher																		
8. Focuses student's attention on important points.	56	38	48	23	25	22	38	27	29	24	17	24	30	24	17	41	31	38
9. Demonstration				3	4	5	6	5	5	3	2	5	7	8	5	0	1	2

APPENDIX C

MASTER TALLY SHEET OF JUDGES' RECORDINGS OF NONVERBAL BEHAVIOR OF TEACHER A's THEORY CLASSES

TABLE XX

MASTER TALLY SHEET OF JUDGES' RECORDINGS OF NONVERBAL BEHAVIOR FOR TEACHER A's THEORY CLASSES

	LESSON ONE			LESSON TWO			LESSON THREE			LESSON FOUR			LESSON FIVE			LESSON SIX		
JUDGE:	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
1. Accepts or sanctions student behavior.				7	7	16	2	1	6	2	2	2	12	7	6	27	29	27
2. Praises student behavior.																		
3. Uses student ideas.																		
4. Shows interest in student behavior.	115	123	98	78	137	134	162	160	152	108	105	114	120	113	108	146	155	144
5. Withdrawing to permit pupil-to-pupil interaction.																		
6. Directions given by the teacher.																		
7. Authority shown by the teacher.																		
8. Focuses student's attention on important points.	23	24	39	65	53	57	39	28	30	44	33	40	29	13	24	23	25	21
9. Demonstration.				6	9	7	2	1	2	4	6	8	7	4	9			

APPENDIX D

MASTER TALLY SHEET OF JUDGES' RECORDINGS OF NONVERBAL BEHAVIOR OF TEACHER B's THEORY CLASSES

TABLE XXI

MASTER TALLY SHEET OF JUDGES' RECORDINGS OF NONVERBAL BEHAVIOR OF TEACHER B's THEORY CLASSES

	LESSON ONE	LESSON TWO	LESSON THREE	LESSON FOUR	LESSON FIVE	LESSON SIX
JUDGE:	A B C	A B C	A B C	A B C	A B C	A B C
1. Accepts or sanctions student behavior.	14 16 19	25 12 31	23 19 30	14 16 15	28 29 27	13 9 20
2. Praises student behavior.						
3. Uses student ideas.			5 5 4	7 0 0		
4. Shows interest in student behavior.	166 174 164	173 177 117	122 120 117	126 126 121	154 147 148	91 76 88
5. Withdrawing to permit pupil-to-pupil interaction.						
6. Directions given by the teacher.						
7. Authority shown by the teacher.						
8. Focuses student's attention on important points.	48 24 27	44 31 41	39 26 44	37 33 36	23 16 30	68 56 55
9. Demonstration.	1 0 0		17 31 21	14 29 17	11 21 17	22 36 22

APPENDIX E

PERSONAL CORRESPONDENCE BETWEEN WRITER AND CO-AUTHOR OF NONVERBAL CATEGORY SYSTEM

613 Woodland Drive
Greensboro, N.C. 27408
February 28, 1971

Dr. Alice Love
College of Physical Education,
Recreation, and Health
University of Maryland
College Park, Maryland 20742

Dear Dr. Love:

I am currently enrolled as a graduate student in physical education at The University of North Carolina at Greensboro. The topic of my thesis is concerned with the nonverbal teacher behavior of college level women physical educators and I am interested in incorporating your nonverbal category system into the thesis.

It would be very much appreciated if you would send me a copy of your research report and any pertinent information concerning the development and operational techniques of the system. The validity and reliability scores are essential for my purposes.

I will be looking forward to hearing from you and receiving the needed information.

Thank you,

(Miss) Ann E. McConnell

APPENDIX F

PERSONAL CORRESPONDENCE BETWEEN CO-AUTHOR OF NONVERBAL CATEGORY SYSTEM AND WRITER

UNIVERSITY OF MARYLAND
College of Physical Education,
Recreation and Health
College Park 20742

Department of Physical Education

March 4, 1971

Miss Ann E. McConnell
613 Woodlawn Drive
Greensboro, North Carolina 27408

Dear Ann:

Thank you for your letter of February 28, 1971. Dr. Roderick and I are both very interested in your research.

We originally developed the category system by observing the nonverbal behaviors of teachers teaching in elementary and secondary schools and recording all of them. Our criteria for selecting a nonverbal behavior as a sample nonverbal behavior were frequency and universality of meaning in our culture (validity).

We video-taped elementary and secondary teachers teaching and then had these tapes coded by many observers in order to establish a reliability of .94 for our system.

The development of the nonverbal category system was just one part of our total project which was to develop a programmed unit for bringing teacher nonverbal behavior to a level of awareness.

I have enclosed a copy of our research report and a slip telling you how you may obtain a copy of our programmed unit on teacher nonverbal behavior.

Dr. Roderick and I would each appreciate having a copy of your abstract when your thesis is complete.

Best wishes on your research.

Sincerely,

Alice Love
Assistant Professor

AL:mpp

cc:Dr. Jessie Roderick

attachments

APPENDIX G

ABRIDGED LOVE AND RODERICK SYSTEMATIC OBSERVATION OF TEACHER NONVERBAL BEHAVIOR AS USED IN THIS STUDY

ABRIDGED LOVE AND RODERICK SYSTEMATIC OBSERVATION OF TEACHER NONVERBAL BEHAVIOR AS USED IN THIS STUDY

Nonverbal Categories and Sample Teacher Behaviors

*1. Accepts Student Behavior.	Smiles, affirmatively shakes head, pats on the back, winks, places hand on shoulder or head.
*2. Praises Student Behavior.	Places index finger and thumb together, claps, raises eyebrows and smiles, nods head affirmatively and smiles.
3. Displays Student Ideas.	Writes comments on board, puts students' work on bulletin board, holds up papers, provides for nonverbal student demonstration.
4. Shows Interest in Student Behavior.	Establishes and maintains eye contact.
5. Moves to Facilitate Student-to-Student Interaction.	Physically moves into the position of group member, physically moves away from the group.
*6. Gives Directions to Students.	Points with the hand, looks at specified area, employs predetermined signal (such as raising hands for students to stand up), reinforces numerical aspects by showing that number of fingers, extends arms forward and beckons with the hand, points to student for answers.
*7. Shows Authority Toward Students.	Frowns, stares, raises eyebrows, taps foot, rolls book on the desk, negatively shakes head, walks or looks toward the deviant, walks or looks away from the deviant, snaps fingers.

8. Focuses Students' Attention on Important Points.	Uses pointer, walks toward the person or object, taps on something, thrusts head forward, thrusts arm forward, employs a nonverbal movement with a verbal statement to give it emphasis.
9. Demonstrates and/or Illustrates.	Performs a physical skill, manipulates materials and media, illustrates a verbal statement with a nonverbal action.

*The names of these categories are the same as those in the Flanders matrix.